

AMENDMENTS TO THE SPECIFICATION

Please replace the paragraph beginning on page 6, line 17 and ending on page 7, line 2 with the following rewritten paragraph:

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In a prototype embodiment used to measure the flow of air in a one inch schedule 40 pipe, signals of 888 kilohertz and 1 megahertz were employed in the two different paths. As illustrated schematically in the Figure, each transducer is coupled to the conduit via a wedge W to define a precise launch angle. The preferred wedge is a low sound speed polymer wedge which converts to, or couples the signal as, a shear wave into the conduit wall, so that leaving the wall, the beam refracts along the path P1 or P2 at an appropriate angle, i.e., an angle to the conduit wall (corresponding to θ_3 of Figure [[1]] 2C), through the low density gas in the conduit interior. The transmitters may typically operate in a continuous wave (CW) mode. However, to inject a time reference as would be useful for measuring c , the CW wave may be coded or otherwise modulated. A similar polymer wedge W and mode conversion receiving geometry at each receiving transducer produces respective receiver output signals S_{R1} , S_{R2} which are continuously processed and sorted into multi-point signal value measurement bins, such as successive time ordered sets of 1024 measurement points. The two sets of received signals are then correlated. The correlation processing may be carried out for example as described in commonly owned U.S. Patent 4,787,252 of Saul Jacobson et al., the text of which is hereby incorporated herein by reference in its entirety.

Please replace the paragraph beginning on page 7, line 21 and ending on page 8, line 2 with the following rewritten paragraph:

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In FIG. 2B, four parallel planes are shown by shading. The interrogating wave now follows a helical path ~~e.g.~~, in the left region, from T1, the path is A'B'C'C", exiting to R1. The

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points where this path intersects the two planes are emphasized by dots at points A' and C". The two planes in this left region are spaced $[[L']]/L'$, whereas the important length is L between the first pair of planes and the second pair at the right. The path at the right starting with T2, is: $[[D'E''F''F'']] D'E''F''$, exiting to R2. If viewed from the end of the pipe, these paths would be congruent. The directions or senses of interrogation would be opposite, however. The paths both in FIG. 2A and those in FIG. 2B are over twice as long as diameter paths of FIG. 2 and so allow more than twice as much time for crosstalk pulses or waves to decay, before the desired fluid-borne pulse or wave signal is received. In continuous wave mode, the result is that SNR is improved, because one can think of the CW interrogation as being made of the serial superposition of an endless stream of individual cycles from a continuous source of sine waves.

Please replace the paragraph beginning on page 8, line 24 and ending on page 9, line 5 with the following rewritten paragraph:

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By employing anti-parallel paths between the respective pairs of transmitter and receiver, the crosstalk from one transmitter reaching the receiver of the other path consists entirely of signal passing through the wall of the conduit, and has no contribution or a greatly reduced coherent component in the relevant time window that has crossed the fluid path or encountered the scatterers of interest for a tag correlation measurement. This situation is illustrated in Figure 3A where the crosstalk signal S_{T12} from transmitter T1, and the crosstalk signal $[[S_{T12}]] S_{T21}$ from transmitter T2 are each shown propagating along the pipe wall to an adjacent receiver of the opposite path. The tag correlation measurement depends on the presence of scatterers, and it is immaterial whether the two pairs are upstream or downstream with respect to the flow as seen in Figure 3A, or *vice versa* as shown in Figure 3B. In both cases, interfering crosstalk through the fluid is eliminated resulting in received signals that

B3 dependably correlate with a well defined first maximum corresponding to the flow velocity of fluid in the pipe.
